

What is claimed is:

1. A method of processing a biological sample, comprising:
providing a separation reagent comprising a microparticle and a receptor for a ligand
on a target species in the biological sample;
reacting the biological sample with the separation reagent to capture the target
5 species;
creating a covalent bond between the target species and the separation reagent to form
an adduct;
separating the adduct from the biological sample; and
separating a component of the target species from the target species.
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2. The method of claim 1, wherein:
the covalent bond is formed by activating a photoaffinity label coupled to the
separation reagent.
- 15 3. The method of claim 2, wherein:
the photoaffinity label is coupled to the receptor.
4. The method of claim 3, wherein:
the photoaffinity label is coupled to the receptor at an N-terminus.
- 20 5. The method of claim 1, wherein:
separating the adduct comprises magnetically capturing the microparticle.
6. The method of claim 1, wherein:
separating the adduct comprises capturing the microparticle by filtration.
- 25 7. The method of claim 1, wherein:

separating the adduct comprises capturing the microparticle by centrifugation.

8. The method of claim 1, wherein:
the receptor comprises at least one binding protein.

5 9. The method of claim 1, wherein:
the receptor comprises at least one antibody.

10. The method of claim 9, wherein:
the biological sample is a forensic sample and the target species is a sperm cell.

10 11. The method of claim 10, wherein:
the separated component of the target species includes a DNA; the method further
comprising:
magnetically removing the adduct; and
analyzing the DNA.

15 12. The method of claim 1, wherein:
the microparticle has a diameter in the range of from about 1 millimeter to 200
nanometers.

20 13. The method of claim 1, wherein:
the microparticle has a diameter in the range of from about 1 millimeter to about 500
nanometers.

25 14. The method of claim 1, wherein:
the microparticle has a diameter in the range of from about 1 millimeter to about 1
micrometer.

15. A separation reagent for a biological sample comprising:
a microparticle;
a receptor coupled to the microparticle; and
a photoaffinity label coupled to the receptor.
- 5 16. The separation reagent of claim 15, wherein:
the photoaffinity label is coupled to the receptor at an N-terminus.
- 10 17. The separation reagent of claim 15, wherein:
the microparticle includes a magnetic bead.
18. The separation reagent of claim 15, wherein:
the receptor comprises at least one binding protein.
- 15 19. The separation reagent of claim 15, wherein:
the receptor comprises at least one antibody.
- 20 21. The separation reagent of claim 20, wherein:
the arylazide comprises a nitroarylazide.
- 25 22. The separation reagent of claim 15, wherein:
the photoaffinity label is sulfosuccinimidyl-perfluoroazidobenzamido-ethyl-1,3'-
dithiopropionate, sulfosuccinimidyl -2-[m-azido-o-nitrobenzamido]ethyl-1,3'-
dithiopropionate, N-succinimidyl-4-azidophenyl-1,3'-dithiopropionate or sulfosuccinimidyl
2-[7-azido-4-methyl-coumarin-3-acetamido]ethyl-1,3'-dithiopropionate.

23. The separation reagent of claim 15, wherein:

the microparticle has a diameter in the range of from about 1 millimeter to 200 nanometers.

5 24. The separation reagent of claim 15, wherein:

the microparticle has a diameter in the range of from about 1 millimeter to about 500 nanometers.

25. The separation reagent of claim 15, wherein:

10 the microparticle has a diameter in the range of from about 1 millimeter to about 1 micrometer.

26. An apparatus for separating components of a biological sample, comprising:

a first chamber for receiving a biological sample;

15 a first capture means proximate to the first chamber for capturing a separation reagent;

a second chamber in fluidic communication with the first chamber; and

a second capture means proximate to the second chamber for capturing the separation reagent.